

10 **STRUCTURE OF A SPORTS FOOTWEAR FOR ROLLER SKATES**
OR ICE SKATES

DESCRIPTION

15 **TECHNICAL FIELD**

The present invention refers to a structure for a sports footwear intended for roller skates or ice skates.

20 **BACKGROUND ART**

The boots that are currently used in association with the skates of the most widespread kinds available on the market, such as ice skates or in-line roller skates for sports, leisure or fitness purposes, can be divided
25 substantially into two main categories: in the first one of these categories, the footwear is comprised of an outer rigid structure, which is constituted by a lower shell of plastic material, and possibly a cuff of the same material, and contains a soft inner boot; the second category involves a footwear composed of a soft upper supported, in correspondence of the
30 sole and the side zones of the leg, by a rigid structure of limited dimensions such as to leave exposed most of the upper; this latter is connected to the rigid structure in such a manner as to enable the skater

2 1-03-2004 EP0300223

to control the skates correctly.

The European patent no. 0 710 141 filed on 19th July 1994 discloses a footwear that falls within this second category as mentioned above; it is in fact provided with an upper which is made of a soft and breathable material and is interconnected with support means that leave the dorsal zone of the upper free; these support means are adapted to sustain the upper so as to enable the skater to keep the skate in its vertical position, and comprise a base onto which the sole of the upper is interconnected in correspondence of the heel and toe zones; in correspondence of the toe zone, the upper is fixed along the sides of the base by means of rivets or by gluing.

The French patent application no. 2 668 072, filed on 19th October 1990, refers again to a footwear for skates belonging to the second above-mentioned category, in which a soft upper is rigidly associated to a rigid outsole; a rigid counter, which is also associated rigidly to said rigid outsole, encloses the rear portion of the upper in such a manner as to enable the ankle to swing back and forth, while being unable to bend sideward.

A further example of a known solution is given by EP 0 841 016, wherein a method for assembling a footwear to a frame is disclosed: the footwear is composed by a first sub-assembly constituted by a soft upper mounted on an inner sole, and by a rigid shell to which the first sub-assembly is attached. The rigid shell is provided with a heel counter and a pair of lateral wings adapted to support a pivotable cuff.

In order to be able to ensure that the upper be firmly kept, the base or the rigid outsole of the skate boots according to the state of the art, as defined by the above-cited prior documents, must be provided with containment elements in order to limit the movement possibilities for the upper; such containment elements, which are substantially in the shape

of a shell or a peripheral wall, are positioned in correspondence of the heel and, possibly, the toe.

5 A major drawback that is encountered in such kinds of boots lies in the fact that the presence of these containment elements has the effect of heavily limiting the possibility to use the same rigid support, or at least the same rigid base, in conjunction with uppers of two or more contiguous

sizes.

Similarly, also the possibility to use the support in conjunction with uppers having different aesthetical, structural or functional characteristics is limited, owing to the difficulties to adapt the rigid support to uppers in which the zones interfacing with said rigid support do not match.

A further drawback derives from the need for the sole of the upper to be fixed in a stable manner all along the peripheral zone of the rigid base, to the purpose of preventing the upper itself from moving with respect to the support or rigid base; such an attachment, which can be carried out with the aid of mechanical fastening means, such as rivets, or by other means or processes, such as stitching, bonding, gluing or welding, serves the purpose of providing the required stability of the upper with respect to the rigid support to allow a precise control of the skate during the related sports activity. This anyway involves not only longer operations in the assembly of the skate, due to the need of providing said stable attachment, but also a definite difficulty in replacing, in the case of breakage or wear, the component parts of the footwear, i.e. the upper or the rigid support, without destroying or, anyway, heavily damaging the remaining component parts.

DISCLOSURE OF THE INVENTION

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It therefore is a main object of the present invention to overcome the above-cited drawbacks of prior-art solutions by providing a structure of footwear for roller skates or ice skates, which is capable of being easily assembled and manufactured.

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Within the above general object, another important purpose of the present invention is to provide a footwear for skates, in which the rigid support can be used in a modular manner for different sizes and/or

different models of uppers.

A further purpose of the present invention is to provide a footwear for skates, in which the various component parts are capable of being easily
5 and conveniently replaced, without any need arising for destructive actions to be taken on any of said component parts to that purpose.

Finally, another equally important purpose of the present invention is to provide a footwear for skates capable of being manufactured at fully
10 competitive costs with the use of readily available, largely known tools, machinery and techniques.

According to the present invention, these aims, along with further ones that will be apparent in the following description, are reached by a
15 structure for a footwear for roller skates or ice skates incorporating the characteristics as recited in Claim 1.

BRIEF DESCRIPTION OF DRAWINGS

20 The features and advantages of the footwear for skates according to the present invention will be more readily understood by the detailed description that follows and from the annexed drawings of some particular embodiments supplied as a non-limiting example, wherein:

25 - Figure 1 is an exploded view of a skate comprising a footwear according to the present invention;

- Figure 2 is a perspective rear overall view of the skate illustrated in Figure 1;

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- Figure 3 is a similar view as the one appearing in Figure 2 of a skate comprising a second embodiment of the footwear according to the present invention;

- Figure 4 is a similar view as the one appearing in Figure 1 of a skate comprising a third embodiment of the footwear according to the present invention;

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- Figure 5 is a perspective rear overall view of the skate illustrated in Figure 4;

- Figure 6 is a similar view as the one appearing in Figure 1 of a skate comprising a fourth embodiment of the footwear according to the present invention;

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- Figure 7 is a partially cross-sectional side view of a fifth embodiment;

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- Figure 8 is an exploded view of a sixth embodiment;

- Figure 9 is a partially cross-sectional side view of the skate illustrated in Figure 8.

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BEST MODES OF CARRYING OUT THE INVENTION

With reference to the above-mentioned Figures, the reference numeral 1 is used there to generally indicate a skate comprising a frame 2 for the support of means for resting and gliding or rolling on the ground, such as two or more rollers (not shown) or an ice blade (not shown, either), and a footwear 3.

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This footwear is essentially comprised of a soft upper 4, a rigid support 5 and an insole 6. The rigid support has a plate 7, against the lower surface of which the frame 2 is attached, and from which a pair of arms 8a, 8b extend upwards to embrace and support laterally the upper 4 approximately in the zone of the ankle. The plate 7 substantially extends from the zone of the heel to the zone of the toe of the footwear 3, and has a

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transverse extension that corresponds approximately to the transverse extension A of the surface of the frame 2 which faces the same plate 7 and is adapted to be coupled thereto. The longitudinal ends of the plate 7 are open and free, i.e. they are not bounded by any walls, vertical edges or
5 counters; in addition, the plate 7 is provided with the apertures 9 and 10, which are obtained approximately in correspondence of the toe and heel zones, respectively, and are axially aligned with the apertures 11 and 12 provided in the frame 2 and the apertures 13 and 14 provided in the rigid sole 6.

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The soft upper 4, of a type that is largely known in the art, may be advantageously made of a transpiring material and fastened on over the foot with the help of generally known fastening means such as strings, buckles, tensioning levers or the like (not shown).

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According to an innovative aspect of the present invention, the insole 6 is made of a substantially rigid material and is contained in or, anyway, enclosed externally by the soft upper 4 so as to confer the necessary structural configuration to the upper 4 itself, as well as to provide the
20 required stability to the foot contained in the footwear 3 once the upper 4 is associated to the rigid support 5 and the frame 2 in order to form the skate 1.

As illustrated in Figure 2, the skate 1 is therefore obtained by
25 assembling in a sandwich-like manner the rigid insole 6, the soft upper 4, the plate 7 and the frame 2, preferably with the help of removable fastening means such as screws 15 and nut screws 16 passing through the holes 9, 11, 13 and 10, 12, 14. In this way, the component part that confers structural rigidity and stability to the soft upper 4 is constituted
30 by the rigid sole 6 lying inside the upper 4 itself, whereas the rigid support 5 serves essentially as a member for the connection with the frame 2 and for supporting the upper 4 laterally.

In order to improve the side and rear support of the ankles and the lower portion of the leg, a second embodiment of the footwear according to the present invention, illustrated in Figure 3, further includes a cuff 17 that is pivotally associated to said side arms 8a, 8b of the rigid support 5; advantageously, the cuff 17 is provided with a pair of front flaps 18a, 18b which are adapted to be fastened together approximately in correspondence of the tibial zone with the help of generally known fastening means, such as a Velcro® strap, strings or a tensioning lever, as well as a rear crosspiece 19 to support the calf when moving backwards.

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From the above description it can be therefore appreciated that the structure of a footwear for skates according to the present invention fulfils the intended aims and advantages: in fact, the connection of the various component parts of the footwear 3 both with each other and the skate frame 2 occurs in correspondence of the toe and heel zones with the help of simple mechanical, preferably removable connection means, such as the screws 15, 16, that are located approximately in correspondence of the longitudinal median axis of the plate 7; a fastening by means of rivets, sewing, stitches or gluing of further zones, such as in particular the peripheral zones of the toe and the heel of the upper 4, becomes therefore unnecessary, since it is actually the rigid insole 6 that confers the required strength and lateral stability to the upper 4, so as to enable the skater to control and lead the skate 1 in an optimum manner.

As a result, the construction and the assembly of the footwear 3, as well as the attachment of the latter to the frame 2, turn out to be simplified to a considerable extent. The same applies to the separation of the various component parts from each other in view of a replacement thereof following breakage or wear-down, such a disassembly being in fact capable of being carried out most easily, without exposing any of the remaining component parts to any destructive operation.

In addition, the structure of the rigid support 5, in particular the plate

7 having dimensions which are extremely reduced and being open at the ends thereof corresponding to the toe and the heel of the footwear 3, enables the same rigid support to be used in conjunction with footwear of different sizes or different models; such a versatility is allowed for by the
5 fact that there are no peripheral vertical walls or toe and/or heel containment shells there to limit the size of the footwear that can be accommodated within the support itself.

It shall be appreciated that the above described footwear structure may
10 of course be the subject of a number of modifications and variants without departing from the scope of the present invention.

So, for instance, a third embodiment of a skate footwear structure according to the present invention is illustrated in Figures 4 and 5, in
15 which the dimensions of the rigid support 5 are further reduced, the plate 7 extending solely in correspondence of the zones of the heel and the plantar arch and being attached to the rigid insole 6 in these zones with the help of suitable fastening means, such as the screws 20, 21 passing through the axially aligned apertures 22, 24 and 23, 25 provided in the
20 same plate 7 and the insole 6, respectively. As a result, the insole 6 will be directly interfaced with and connected to the frame 2, under the interposition of the upper 4, by means of the screws 15, 16 passing through the apertures 11, 13 and 12, 14, respectively, whereas the rigid support 5 will only be attached to the insole 6, with the interposition of
25 the upper 4, as already explained above.

Figure 6 illustrates a fourth embodiment of a footwear according to the present invention, in which the rigid support 5 is integrally obtained with the frame 2, forming a single-piece construction therewith.

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Both in the afore considered third embodiment and in this fourth embodiment of the footwear 3 there may be provided an additional cuff as previously described with reference to the second embodiment illustrated

in Figure 3.

Figure 7 illustrates a fifth embodiment of a footwear according to the present invention, in which the side arms provided to support the ankle are an integral part of the cuff 17: the latter is in fact provided with a pair of side arms 26 that extend downwards towards the plate 7, which is in turn provided with a pair of brackets 27, to which the cuff 17 is pivotally associated through the free ends of the side arms 26.

Figures 8 and 9 illustrate a skate 101 that comprises a frame 102 supporting means for resting and gliding or rolling on the ground, such as two or more rollers or an ice-skating blade, on top of which there is associated a sixth embodiment of a footwear 103 according to the present embodiment.

This footwear is essentially comprised of a soft upper 104, a rigid support 105 and an insole 106. The rigid support 105 has a plate 107 connected, through fastening means 120, 121 that are largely known in the art, to the frame 102 in correspondence of the recessed seats 130, 131, which are provided between the resting surfaces 132 and 133 for the heel and the toe of the foot, respectively, and are situated adjacent thereto.

The soft upper 104, of a type that is largely known in the art, is provided with an insole 106 made of a substantially rigid material and is contained in or, anyway, enclosed externally by the soft upper 104 so as to confer the necessary structural configuration to the upper itself, as well as to provide the required stability to the foot contained in the footwear 103. The upper 104 is connected to the frame 102, with the help of generally known fastening means 115, 116, in correspondence of the above cited resting surfaces 132 and 133 for the heel and the toe portions of the same upper 104, respectively.

The plate 107 therefore extends underneath the upper 104 so as to essentially cover the plantar arch zone of the foot, and the ends thereof are again open and free, i.e. they are not bounded by any walls, vertical edges or counters. The rigid support 105 is further provided with a pair of
5 arms 108a, 108b, which extend upwards starting from the plate 107 to embrace and support laterally the upper 104 approximately in the zone of the ankle.

In this way, the component part that confers structural rigidity and
10 stability to the soft upper 104 is constituted by the rigid sole 106 lying inside the upper 104 itself, whereas the rigid support 105 serves essentially as a reinforcement of the frame 2 and a lateral support for the upper 104.

15 In view of improving the side and rear support of the ankles and the lower portion of the leg, there may be advantageously provided a cuff to be pivotally associated to said side arms 108a, 108b of the rigid support 105, as already mentioned in connection with the afore considered
embodiments.

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It should be finally noticed that the materials used to manufacture the structure of the present invention, as well as the shapes and the dimensions of the individual component parts thereof, may each time be selected so as to more appropriately meet the particular requirements or
25 suit the particular application, again without departing from the scope of the present invention.